Abstract

Rain sensing automatic wiper and secure access system is used to detect rainfall and activate automobile windshield wipers without driver interaction. This system is developed to reduce driving distractions and allow drivers to focus on main task of driving. The distraction eliminated with the development of this system is the manual adjustment of wipers when driving in precipitation. The few seconds that a driver takes their attention off the road to adjust a knob while driving in poor weather conditions could potentially lead to car accidents. The system uses a combination of impedance and piezo-electric sensors to detect rain and its intensity. The system contains a microcontroller that takes in the input signals from the sensors and controls the operation of the windshield wipers based on those input signals.

1. INTRODUCTION

The project aims to develop an automatic windshield wiper system that automates the process of the driver’s manual response to rain on the windshield. The distraction considered in this project is the adjustment of wiper speed based on the intensity of precipitation. By eliminating the need for drivers to adjust wiper speed while driving, the number of accidents caused by distraction can be slightly reduced. The windshield wiper system will manage to do this by combining the performance of an inexpensive infrared sensor and impedance sensors.
2. DESIGN MODULE WISE

I. Block Diagram

![Block Diagram Image]

Figure 1: Block Diagram

II. Block diagram Explanation

The block diagram of a Rain and Dust sensing Automatic Car Wiper Secure Access System is Based on Rain and Dust Sensor, Finger print module is shown in the fig.1. This system consists of various parts such as Sensors, Fingered print module, microcontroller, motor driver, LCD, DC motor.

Power Supply Circuit Diagram

![Power Supply Circuit Diagram Image]

The power supply most important for electronic circuits, which is provide the required power to microcontroller and other electronics devices.
III. Microcontroller Circuit

Microcontroller and Sensors are the heart of the Rain and Dust Sensing Automatic Car Wiper and Secure Access System. There are used various application such as automatically controlled products, automobile engine control systems, to control medical devices, remote controls, printer, scanner, office machines, appliances, power tools, toys and other embedded systems. The size and cost of the microcontroller are less. The 12 MHz crystal oscillator is used to provide the required clock signals to the microcontroller.

IV. Dust Sensor

![Dust Sensor Diagram]

In this application we are using the dust sensor to detect the dust on the glass the function is if the dust is present on glass then light emitted from light source is will not pass through the glass and photodiode will not detect this condition set the output equal to logic ‘0’ and the microcontroller start the dc motor to clean the dust.

V. Rain Sensor

![Rain Sensor Diagram]

Here the rain sensor used to detect the rain on the glass. if water drops are detected then the connection between the wires is established and circuit is complete then signal send to microcontroller and this is output equal to logic 0 then the controller will start the wiper using dc motor to clean water on glass.

VI. DC Motor

DC motors are used to physically drive the application as per the requirement provided in software. The dc motor works on 12v. To drive a dc motor; we need a dc motor driver called L293D. This dc motor driver is capable of driving 2 dc motors at a
time. In order to protect the dc motor from a back EMF generated by the dc motor while changing the direction of rotation, the dc motor driver have an internal protection suit. We can also provide the back EMF protection suit by connecting 4 diode configurations across each dc motor.

VII. LCD Display
A liquid-crystal display (LCD) is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. The LCD is used in a wide range of applications including computer monitors, televisions, instrument, aircraft cockpit displays, and signage. The most common in consumer devices such as video players, gaming devices, clocks, watches, calculators, and telephones, and have replaced cathode ray tube (CRT) displays in most applications. The LCD screen is more energy efficient than a CRT. The power consumption is very low while compare with other devices.

VIII. Motor with Driver Circuit
The motor driver circuit is used to provide proper matching between motor and circuits. We are using L293D motor driver IC.

3. CONCLUSION
Here using different types of sensors that are rain sensor, dust sensor and fingerprint sensor module. This system can operate automatically without interference of human for the different purpose. It removes water drops on glass and it cleans the dust also and using the fingerprint sensor module our vehicle can protected from any unauthorized access.

4. REFERENCES